

PATENT SPECIFICATION

DRAWINGS ATTACHED

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880,182



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COMPLETE SPECIFICATION

Improvements in the Manufacture of Bread

We, JOSEPH RANK LIMITED, of Millocrat House, Eastcheap, London, E.C.2, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention which is an improvement in or modification of the invention claimed in Patent No. 771,361 relates to the manufacture of bread from flour which is unbleached, that is to say, flour which is untreated with a gaseous bleaching agent and to which no chemical bleaching agent has been added.

In our Patent No. 771,361 a process for the manufacture of bread from unbleached untreated flour has been described and claimed according to which the ingredients of the bread including the whole of the flour are mixed together in the casing of a dough mixing machine working at normal speed to a crumbly condition as the first stage, and the crumbly mixture is subjected in the casing to an enclosed atmosphere enriched with oxygen, the pressure of this atmosphere preferably being about the same as external atmospheric pressure and not exceeding approximately five pounds per square inch, and is worked in this atmosphere by the machine to a substantially clear condition, i.e. every particle of flour is hydrated with water, as the second stage.

It has now been found according to the present invention that this process may be employed for the manufacture of bread in a continuous manner.

The invention therefore consists in the improvement in or modification of the process of making bread claimed in Patent No. 771,361. The said improvement or modification comprises mixing together the ingredients of the bread including the whole of the flour in a continuously operating dough mixing machine and introducing oxygen or oxygenated

air into the mixing machine during the mixing operation prior to the extrusion of the dough from the mixing machine for further treatment of the dough in bread making.

Referring to the accompanying drawings, Fig. 1 represents diagrammatically one form of continuous dough making machine which may be employed in carrying out the invention while Fig. 2 represents an alternative form of machine.

Referring to Fig. 1 *a* represents an axial flow mixer driven by motor *m* and provided with mixing and conveyor blades as shown, into which cylinder the dry ingredients of the dough are introduced into the feed hopper from a continuously operating weighing device *c* which is supplied from a storage vessel *d*.

The yeast and water mixture or, if required, a fluid ferment is introduced into the mixing cylinder *a* from tank *e* by metering pump *f* through pipe line *g*. Pipeline *g* may alternatively feed into hopper *b*.

A supply pipe *z* may be provided for supplying fat or oil to the dough mix and the amount employed may be controlled by the valve shown.

The pipeline *g* is provided with a flow meter *h* and an oxygen valve *i* which is actuated by pressure of the yeast and water mixture or ferment in the pipeline *g*. Instead of introducing the oxygen with the yeast water mixture or ferment into the mixing cylinder *a* through pipeline *g* it may be introduced at one or more points *j* along the mixing cylinder but in both cases it is introduced so as to avoid admission of oxygen into a dry mix.

The dough after passage through the mixing cylinder is extruded through the outlet *k* and is thereafter subjected to the usual fermentation and bread making steps as in the main patent, or alternatively, the kneaded dough may be deposited directly into bread

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tins according to the type of breadmaking process employed.

In the arrangement shown in Fig. 2 *l* shows the mixer, which operates under pressure from oxygen infused into the yeast water mixture or ferment supplied by pipe *s* and controlled by valve *t*, the mixer *l* is fed with dry dough ingredients from chamber *n* supplied with a preweighed quantity of the ingredients from continuously operating weigher *o* which in turn is supplied from storage vessel *p*. Pneumatically operated gates *q* and *r* are provided at the head and lower end of chamber *n* in order that a weighed charge of dry ingredients may be fed into the mixer *l* when the lower gate is opened and the upper one closed, and chamber *n* is pressurised by compressed air through valve *y* to transfer the contents.

The water and yeast or, if required, a fluid ferment (or "brew") is admitted into the mixer *l* by the pipe *s* the flow being regulated by valve *t*. When the mixing is completed the dough is discharged through a gate *w* which covers an opening at the bottom of the mixer *l*, the gate being withdrawn endwise to allow the dough to be ejected into the extruding cylinder *u* from which it is discharged on to the conveyor band *v* for further treatment in the manufacture of bread as in the main patent. The cycle of operations is

repeated as each charge of dough is expelled from cylinder *u*.

In both the foregoing examples the crumbly stage of the mixed ingredients referred to in the main patent is achieved just beyond the point at which the water and yeast or fluid ferment is admitted to the mixing chambers, and the "clear" stage referred to in the main patent occurs before the dough is discharged from the mixing chambers.

WHAT WE CLAIM IS:—

1. The improvement in or modification of the process of making bread claimed in Patent No. 771,361, which comprises mixing together the ingredients of the bread including the whole of the flour in a continuously operating dough mixing machine and introducing oxygen or oxygenated air into the mixing machine during the mixing operation prior to the extrusion of the dough from the mixing machine for further treatment of the dough in bread making.

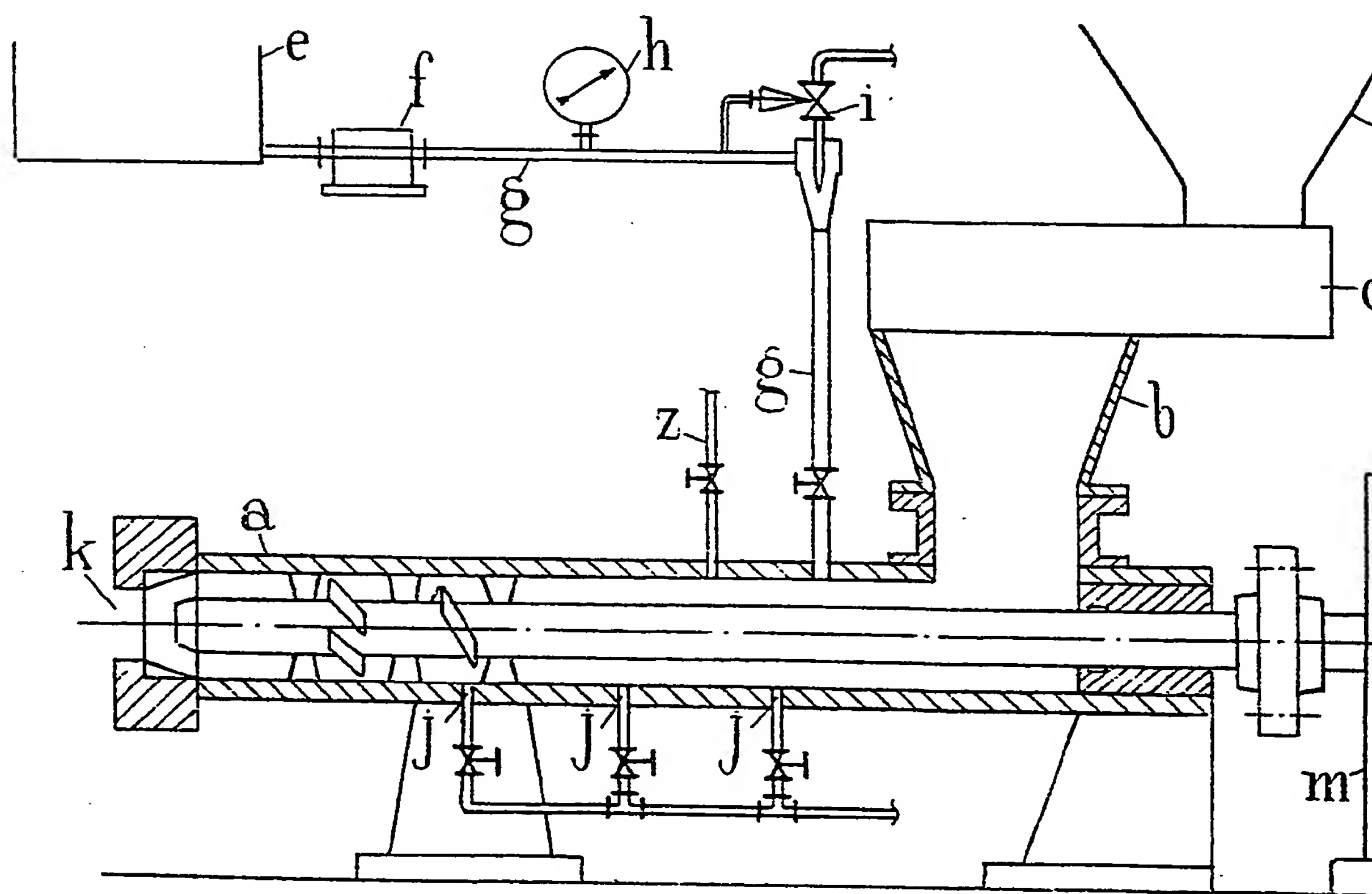
2. The process as claimed in Claim 1 wherein the oxygen or oxygenated air is continuously introduced into the mixing machine either separately from or infused into the yeast and water brew.

3. The process of continuously making bread substantially as hereinbefore described with reference to the accompanying drawings.

MARKS & CLERK.

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Fig. 1.



**This drawing is a reproduction of
the Original on a reduced scale.**

Fig. 2.

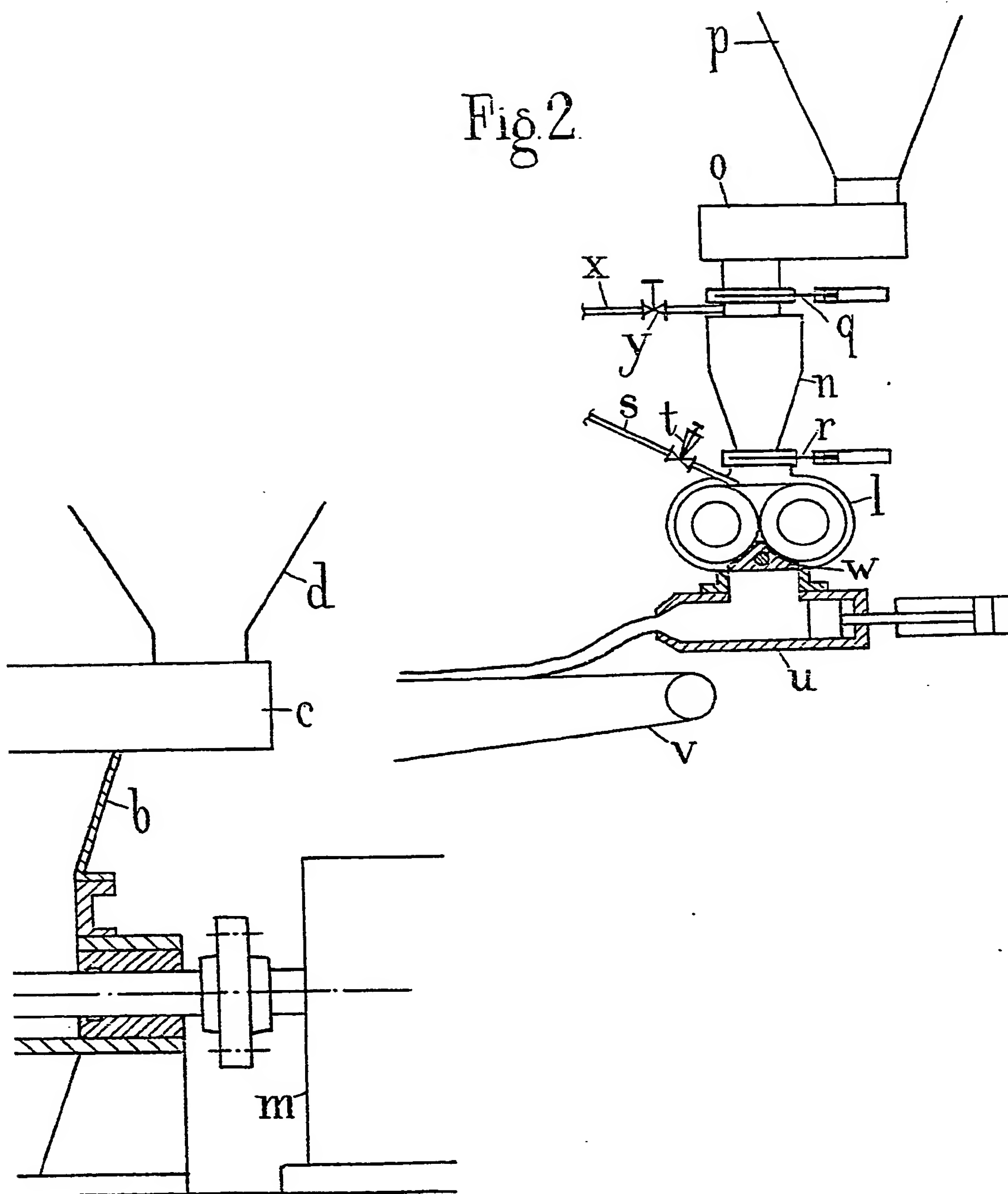


Fig. 1.

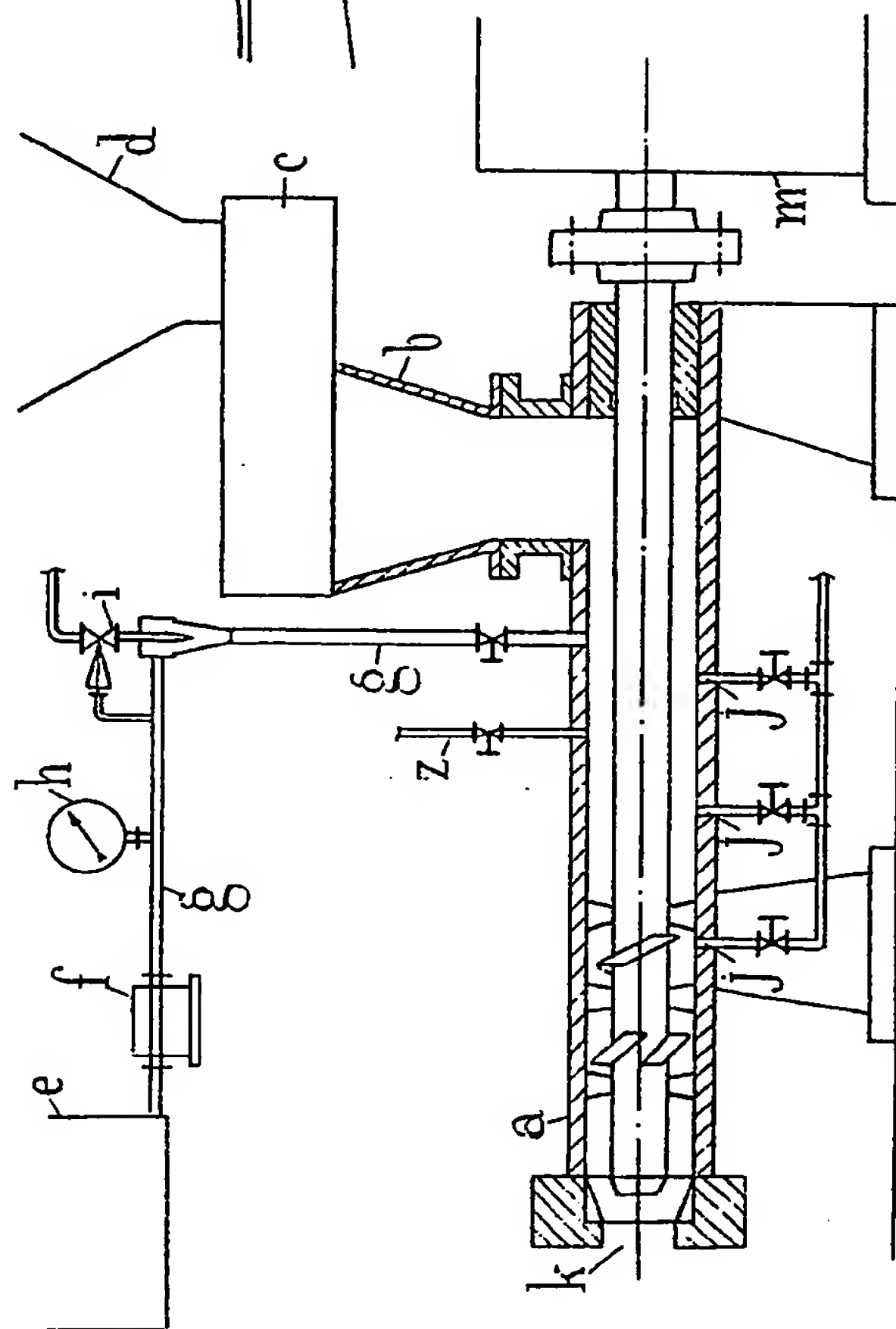
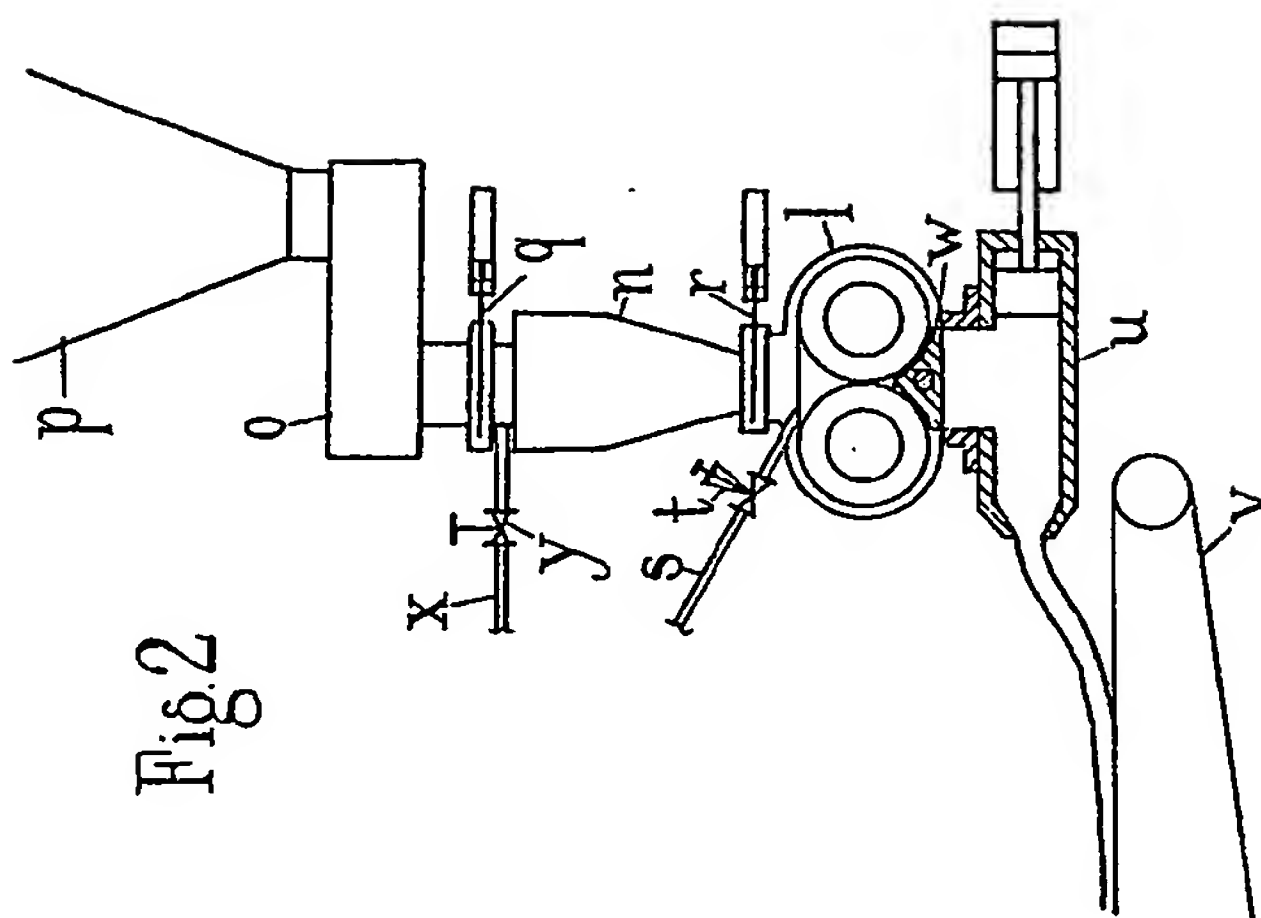


Fig. 2



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